GRID-IN QUESTIONS

Questions 58 - 62

58.

Meals	Profit
Pizzas	$2,340
Nuggets	$1,950
Burgers	$1,710
Total	

The table above shows average monthly profit of a cafeteria earned from selling pizzas, nuggets and burgers. What percent of total monthly profit is earned from pizzas' sales?

59. Solve the equation for x:

$$\frac{15 - 75x}{45} = -3$$

60. In a scaled drawing of a square patio, the length of the side of the patio is 14 *cm*. In the drawing, 7 cm represents 3 m. What is the area of the actual patio?

61. Boxes that are 24 inches tall are being stacked next to boxes that are 15 inches tall. What is the shortest height at which the two stacks will be of the same height?

62. Mr. Hampton deposited $8,000 in his bank account. Assuming that he did not make any credit or debit transaction in his account, the balance in his bank account was $9,024 after two years. What was the annual rate of simple interest, in percent was applied?

MULTIPLE CHOICE QUESTIONS

Questions 63 - 68

63. Two containers can hold the same amount of liquid. $\frac{5}{8}$ of the first container and $\frac{7}{12}$ of the second container is empty. If the liquid from the first container was poured into the second container, what fraction of the second container would be filled with liquid?

A. $\frac{5}{24}$

B. $\frac{19}{24}$

C. $\frac{29}{24}$

D. $\frac{17}{24}$

64. On the map, 4 inches represent 5 yards. Two points representing National Gallery and History Museum are 13.5 inches apart from each other. What is the actual distance between National Gallery and History Museum?

E. $10\frac{7}{8}$ yards

F. $16\frac{4}{5}$ yards

G. $10\frac{4}{5}$ yards

H. $16\frac{7}{8}$ yards

65. Solve for x in terms of y if $3x + 5 = -1 - y$.

A. $x = -2 - \frac{y}{2}$

B. $x = -2 - \frac{y}{3}$

C. $x = -6 - y$

D. $x = -6 - 3y$

66. Steve types 1,260 symbols in 5 minutes and 15 seconds, Bria types 1,989 symbols in 9 minutes and 45 seconds. What is the difference between their rates of typing, in symbols per second?

E. 0.8

F. 0.7

G. 0.6

H. 0.5

67. $m - 1.02 = 0.15 + \frac{23}{10}$

What is the value of m expressed as a decimal?

A. 3.47

B. 1.43

C. 1.4

D. -0.64

68. Sara needs $1\frac{1}{4}$ cups of sugar and $3\frac{1}{3}$ cups of flour to make a cake. What is the ratio of sugar to flour in the recipe?

E. 3 :4

F. 3 :5

G. 3 :7

H. 3 :8

Questions 69 - 74

69. The perimeter of a quadrilateral is 48 *cm*. The lengths of quadrilateral's sides are in the ratio 2 :3 :5 :6. What is the length of the largest side?

A. 6 cm

B. 9 cm

C. 15 cm

D. 18 cm

70. Ella has 12 white and 13 black balls in a box. She randomly draws one ball from the box. If the first ball drawn is white, what is the probability that the second ball she draws will also be white, if the first ball is not replaced back to the box?

E. $\frac{11}{24}$

F. $\frac{11}{25}$

G. $\frac{11}{13}$

H. $\frac{12}{13}$

71. Each number in the sequence is 5 more than thrice the previous number. If the 11^{th} number in the sequence is 77, what would be the 10^{th} number?

A. 236

B. 82

C. 72

D. 24

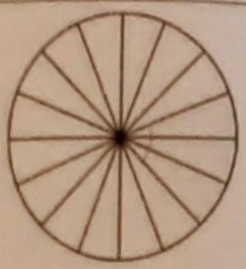
72. On the map, 4 cm represents 125 km. If the distance between two cities is 520 km, what is the distance between these cities on the map?

E. 16.64

F. 12.48

G. 1.96

H. 1.04

73. 

A circle is divided into 16 equal sectors. What is the central angle of shaded sector in degrees?

A. 22.5°

B. 45°

C. 67.5°

D. 72°

74. $a \cdot \frac{2}{b} = 18$

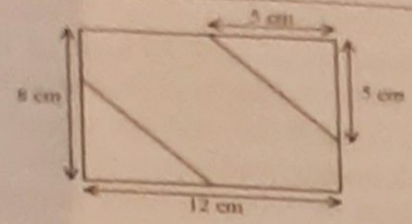
For the equation above, what is the sum of the values of a when $b = -3$ and $b = 2$?

E. 9

F. -9

G. 18

H. -18

75. 

The diagram above shows a rectangle with two cut corners. The width of the rectangle is 8 cm and the length of the rectangle is 12 cm. If the corners are cut in the shape of isosceles right triangles, what is the area of the shaded part of the rectangle?

A. 46 cm^2

B. 71 cm^2

C. 83.5 cm^2

D. 96 cm^2

76. Apples are sold for \$2.50 per kilogram and mangoes are sold for \$3.50 per kilogram. If Mrs. Pearson bought the same amount of oranges and mangoes and paid a total bill of \$21.60, how many kilograms of fruit did she buy altogether?

E. 3 kg

F. 3.6 kg

G. 6 kg

H. 7.2 kg

77. Four consecutive multiples of 3 add up to 126. What is the greatest of these multiples of 3?

A. 27

B. 30

C. 33

D. 36

78. **Equipment Sold at Two Stores**

Equipment	Store 1	Store 2
Balls	12	18
Dumbbells	7	9
Rockets	15	13
Hoops	6	10

The table above shows the data about sold equipment during a day in two sport stores. How many more percent balls were sold at store 2 than store 1?

E. 5%

F. 6%

G. 8%

H. 10%

79. Jenny made an installation consisting of some cubes of the same size. The edge of cube used is 5 cm. If the volume of the installation figure is 4,875 cm^3, how many cubes did Jenny use?

E. 37

F. 38

G. 39

H. 40

80. $\frac{9^3 \times 3^4}{27^2} = ?$

A. 3^6

B. 3^5

C. 3^4

D. 3^3

Questions 81 - 86

81. $|x + y|$

$|-x - y|$

$|x| + |y|$

$|x| - |y|$

$|-x| + |-y|$

If x and y are two positive integers how many of the five expressions above are equivalent to $x + y$?

E. 1

F. 2

G. 3

H. 4

82. The sum of three numbers x, y and z is $2x$. If the ratio $y : z = 2 : 3$, what is the ratio $y : x$?

A. 3 :5

B. 2 :5

C. 5 :2

D. 5 :3

83. $M = \{3, 6, 9, ..., 42\}$

Set N (not shown) is a list of multiples of 2. Sets M and N have the same number of elements. If the first number in the set N is 14, what is the greatest number in the set N?

A. 36

B. 38

C. 40

D. 42

84. In 2016, scientists discovered that 12,000 of wild mice lived on 200 km^2 of land area. In 2018, the mice population has increased so that the average population per square kilometer was equal to 64. What was the total increase in mice population from 2016 to 2018?

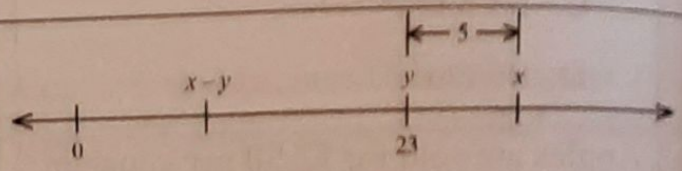
A. 600

B. 800

C. 1,000

D. 1,200

85.



According to the number line above, what is the position of $x - y$?

E. 28

F. 5

G. 18

H. -5

86. Which number could be the sum of three consecutive odd integers?

E. -39

F. -38

G. -37

H. -36

Questions 87 - 92

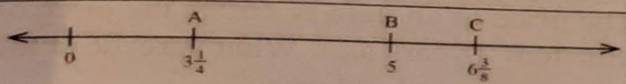
87. 11, 11, 13, 16, 16, 17, 18, 18, 18

What is the difference between the mode and the median numbers of the above data?

A. 1
B. 2
C. 3
D. 7

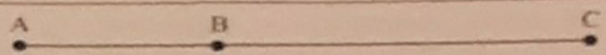
88. If $(2a)(3b) = 1{,}200$, what is the value of $\frac{100}{b}$?

E. a
F. $2a$
G. $\frac{1}{2}a$
H. $\frac{2}{a}$

89. 

On the number line above, what is the ratio $\overline{AB} : \overline{BC}$?

A. 9 :7
B. 8 :7
C. 14 :11
D. 13 :10

90. 

The distance from A to B is 40% the distance from B to C. If the distance from A to C is 28 km, what is the distance, in kilometers, from B to C?

E. 8 km
F. 12 km
G. 16 km
H. 20 km

91. Emily has 5 skirts, 6 blouses and 3 pairs of shoes, which she can wear to the school. Each morning Emily chooses one skirt, one blouse and one pair of shoes. In how many different ways can Emily wear her school dress in the morning?

A. 14
B. 33
C. 63
D. 90

92. The length of square A is 2 cm longer than the length of another square B. The area of the square A is 196 cm^2. What is the area of the square B?

A. 192 cm^2
B. 169 cm^2
C. 144 cm^2
D. 100 cm^2

Questions 93 - 98

93. In the veterinary clinic, there are seriously ill animals, animals with fractures and animals that need a vaccination. The ratio of seriously ill animals to the animals with fractures is 7: 4, the ratio of animals with fractures to the animals that need a vaccination is 2 :5. What is the ratio of seriously ill animals to all animals in the veterinary clinic?

E. 1 :3
F. 7 :5
G. 7 :10
H. 7 :18

96. In a city marathon, 122 people finished the run in less than 90 minutes, 246 people finished the run in more than 90 minutes but less than 100 minutes. The remaining 1,632 people finished the run in more than 100 minutes. What percent of the people did finish the run in less than 100 minutes?

E. 6.1%
F. 12.3%
G. 18.4%
H. 81.6%

94. If x is an odd negative integer, which statement must be true?

E. $x+1$ is positive
F. $x+1<x$
G. $x+3$ is negative
H. $x+1>2x$

97. Angles A and B are supplementary. If measure of angle B is 44° greater than measure of angle A, what is the measure of the greater angle?

A. 112°
B. 102°
C. 68°
D. 67°

95. For $a>0$, how is $\frac{2}{3a}-\frac{1}{a}$ written as a single fraction?

A. $-\frac{1}{a}$
B. $\frac{1}{3a}$
C. $-\frac{1}{3a}$
D. $\frac{1}{a}$

98. The price of an item is 250% the price of this item 2 years ago. What percent of the new price is the old price?

E. 150%
F. 40%
G. 2.5%
H. 25%

Questions 99 - 104

99. 4 gallons = 64 cups

2 cups = 16 ounces

Which of the following statements must be true?

A. 8 gallons = 2,048 ounces

B. 2 gallons = 256 ounces

C. 1 gallon = 64 ounces

D. 4 gallons = 128 ounces

100. The sum of the measures of acute and obtuse angle in the triangle is 152°. Which of the following couldn't be the measure of one of triangle's angles?

E. 28°

F. 112°

G. 98°

H. 68°

101. Aaron passed three tests with a mean score of 78. He has to pass two more tests and wants to get a mean score of at least 82. Which of the following could be the scores of these two tests?

A. 86, 87

B. 88, 89

C. 87, 88

D. 86, 89

102. $\frac{4}{5}$ of all students in the class like dancing. $\frac{1}{3}$ of those who like dancing, like singing and $\frac{1}{4}$ of those who do not like dancing, like singing. Which fraction of the class like singing?

E. $\frac{19}{60}$

F. $\frac{7}{12}$

G. $\frac{4}{15}$

H. $\frac{11}{18}$

103. $(-5)^0 + (-2)^1 + 2^2 + 3^3$

What is the value of the expression above?

A. 28

B. 34

C. 24

D. 30

104. The online site offers a service to compare the specifications of several cars of the same cost. If a customer chooses 5 different cars, how many different pairs of cars can he combine?

E. 9

F. 10

G. 20

H. 25

Questions 105 - 110

105. Find the number that is halfway between -0.3 and $\frac{7}{20}$?

A. 0.25
B. 0.05
C. 0.025
D. 0.005

106. A rectangular container is 12 feet long, 8 feet wide and 5 feet high. If one third of this container is filled with water, what is the volume of water in container?

E. $120\ ft^3$
F. $140\ ft^3$
G. $160\ ft^3$
H. $180\ ft^3$

107. $\{-3, 0, 3, 5, 7\}$

A student made a list of all possible products of two different numbers from the set of numbers above. What fraction of the products are multiples of 3?

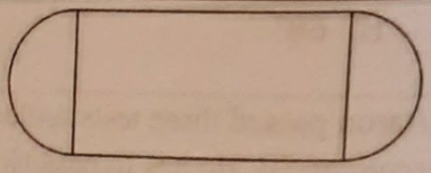
A. $\frac{1}{2}$
B. $\frac{3}{10}$
C. $\frac{3}{20}$
D. $\frac{9}{10}$

108. A number x is divided by 20. If the quotient is 6 and a remainder is 13, what is correct expression for x?

E. $x = 6 \cdot 13 + 20$
F. $x = 13 \cdot 20 + 6$
G. $x = 6 \cdot 20 + 13$
H. $x = (6 + 13) \cdot 20$

109. Holiya rolls a number die twice. What is the probability that she will roll at least 11 in total?

A. $\frac{1}{36}$
B. $\frac{1}{18}$
C. $\frac{1}{12}$
D. $\frac{1}{9}$

110. 

The stadium above is designed in the form of rectangle 80 m long and two semicircles at both ends with diameter of 60 m. What is the area of the stadium?

E. $4{,}800 + 3{,}600\pi\ m^2$
F. $2{,}400 + 3{,}600\pi\ m^2$
G. $2{,}400 + 900\pi\ m^2$
H. $4{,}800 + 900\pi\ m^2$